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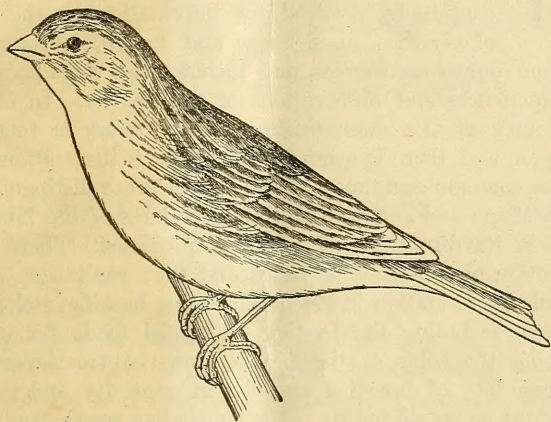
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# CANARIES

## THEIR CARE AND MANAGEMENT

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Contribution from the Bureau of Biological Survey  
E. W. NELSON, Chief

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**T**HIS BULLETIN, intended to meet the requests continually received for information on the care of canaries in sickness and health, is compiled from numerous sources, and includes also some personal experiences and observations of the author. In it the history of the domestication of the canary is touched upon, and there is a brief account, with illustrations, of the common and fancy varieties, which are distinguished by shape and color. The chief usefulness of the bulletin is in its discussion of practical problems. There is a section on the style of cages and their sanitation. Detailed information is given concerning bathing, molt, and food, including the feeding of special foods for deepening the color of the birds. One chapter shows the possibility of breeding canaries in captivity and is designed as an aid to this. The concluding pages deal with the health of the birds. Methods of ridding them of vermin are set forth, as well as instructions for caring for fractured legs and wings, and for the treatment of respiratory and intestinal diseases and of such ailments as loss of feathers. The bulletin is intended for all who are interested in canaries.

## CANARIES: THEIR CARE AND MANAGEMENT.

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### INTRODUCTION.

Among the birds kept for household pets none is so common or so well known as the canary. So simple are its requirements in the way of food and care that it needs little attention, and because of its pleasing songs and interesting habits it is a universal favorite. Readily adaptable to cage life, canaries display little of the fear shown by wild birds in captivity, and the ease with which they may be induced to nest and rear young adds to their popularity.

Canaries have been domesticated for several hundred years and, though more common in western Europe and the United States than elsewhere, have been carried over practically the entire civilized world. In England and Germany there are hundreds of canary breeders and many avicultural societies. Several periodicals dealing solely with cage birds are published there, and in the larger cities bird exhibitions are held annually. In the United States there are comparatively few fanciers as yet, so that, though numbers of canaries are reared here, a large part of the stock is secured from abroad. More than three and one-quarter millions of canaries have been brought into the United States during the last 10 years, an average of more than 300,000 birds each year. Most of these have come from Germany, but some are imported from England.

Canaries seem to thrive in any climate where not exposed to too severe weather conditions, and in spite of the long period they have been protected and held in captivity they are capable of enduring a surprising degree of cold when hardened to it. In England it is not unusual to find them in outdoor aviaries throughout the year. They seem able to establish themselves again in a wild state under favorable conditions. In 1909, a brood of domestic canaries was



released on Midway Island, a small sandy islet in the Hawaiian group. By 1914 they had increased until it was estimated that they numbered about 1,000.

### HISTORY.

The actual origin of the canary as a cage bird is as obscure as is the early history of other domesticated animals. It seems probable that captive canaries were first secured from the Canary Islands, a group with which they have long been popularly associated. There are in the Old World, however, two closely allied forms from which the domesticated canary may have come. One of these, the bird now recognized as the "wild canary" (see illustration on title-page), is found in the Canary Islands (with the exception of the islands of Fuerteventura and Lanzarote), Madeira, and the Azores. The other form, the serin finch,<sup>1</sup> ranges through southern Europe and northern Africa, extending eastward into Palestine and Asia Minor. In a wild state these two forms are very similar in color and to a novice are hardly distinguishable.

If, as is supposed, the original supply of canaries came from the Canary Islands, it may be considered doubtful that the stock thus secured has furnished the ancestors of all our canaries. The slight differences in color between the serin finch and the canary would probably have passed unnoticed by early ornithologists and bird lovers. With bird catching a widespread practice in middle and southern Europe, the serin would often be made captive and be accepted without question as a canary. In this way serins and wild canaries may have been interbred until all distinguishable differences were lost.

The original canary, whether serin or true wild canary, in its native haunt was much different in color from its modern pure-bred descendant. The back of the wild bird is, in general, gray tinged with olive-green, especially on the rump, with dark shaft streaks on the feathers. Underneath it is yellowish, streaked on sides and flanks with dusky. Wild canaries from the Canary Islands, the Azores, and Madeira differ from the continental serins in being slightly grayer with less of yellowish green in the plumage above. In addition, the rump is duller yellow and the bill is distinctly larger. All of the wild birds have the feet and legs (tarsi) horn brown, the upper half of the bill dark brown or horn color, and the lower half paler.

Both of the wild varieties inhabit vineyards, thickets, and more open country where bordered by trees. At times during fall and winter great flocks are found together. The birds feed upon various

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<sup>1</sup> The scientific name of the serin is *Serinus serinus serinus*. The wild canary is known as *Serinus s. canarius*. Both were first described by Linnaeus.



seeds and occasionally eat figs or other small fruits in season. In a wild state they nest early in spring and again later, rearing two broods. The nest, made of plant stems and grasses and lined with hair and plant downs, is placed in bushes or low trees. The eggs are clear green in color, spotted and clouded with deep wine red and reddish brown. From three to five eggs are deposited.

### VARIETIES.

Variation among domesticated canaries began early, as Hernandez, in 1587, speaks of the canary as wholly yellow in color save for the tips of the wings. The various forms have had their origin in distinct geographic areas, and though some are almost extinct at present, all at one time or another have had a devoted following of fanciers. At present at least 14 distinct strains, with a large number of varieties, are known.

The common canary is reared primarily for its song, and from it probably came the roller, or song canary, a great favorite in Germany and, more recently, in England. In rearing song canaries attempt is made to produce males with clear, soft, pleasing songs with long rolls or trills, and no attention whatever is paid to other characters. These birds, therefore, are usually nondescript as regards color and appearance, but care is taken in mating to secure males that are good singers and females from good stock. The young birds when fledged are put in rooms with birds noted for their soft song, and here, through imitation, they develop their own vocal powers. Careful watch is kept over them, and any bird developing harsh notes is removed at once to prevent his corrupting the purity of tone in the song of his brothers. A mechanical instrument known as a bird organ, that produces liquid trills, is frequently utilized in training, usually when the adult birds are silent during molt. Ordinarily the room where these birds are kept is darkened, and frequently the cages containing the young birds are screened with cloth to lessen a tendency to objectionable loudness of song. In six months or less, their education completed, these songsters may be sold or in their turn utilized in training others still younger. It is common to teach these birds some simple strain or air, through its constant repetition by whistling or by means of an instrument. Well-trained birds bring high prices, and a fair number of these find their way each year into this country.

In the great class of exhibition birds perhaps none is more striking than the Belgian canary (fig 1). Formerly known as the "king of the fancy," it was reared extensively in Belgium, but of late years its popularity has been on the decline. In 1911 it was said that few pure-bred Belgians were to be found, and under present war con-



ditions it may never recover its own. The typical Belgian canary is a large bird with a small head, long, slender neck, large shoulders, and a long, tapering body. It is primarily a bird of "position." When examined it hops up on a perch and throwing its shoulders up brings the head down well below their level. The back and tail form a perpendicular line and the feet are held close together.

Another bird of position is the Scotch fancy canary (fig. 2). This variety resembles the Belgian, but when in position throws the tail in under the perch until its outline in profile is almost a semicircle.

Another well-marked variety is the cinnamon canary, one of the earliest forms to appear, but one whose origin is wholly unknown. Its true color is a dun or dull brown that has been likened to cinnamon. In exhibition birds the color is usually intensified by

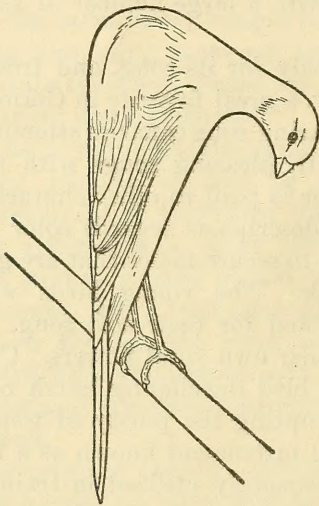


FIG. 1.—Belgian fancy canary.

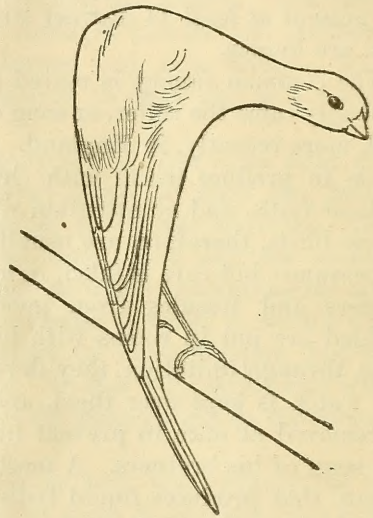


FIG. 2.—Scotch fancy canary.

color feeding (see p. 12). In addition to the body color the cinnamon canary is peculiar in possessing red or pink eyes, a character that denotes cinnamon blood even in a yellow or buff bird. The cinnamon inheritance is transmitted only by the male; young reared from a cinnamon mother and a male of any other form lacking cinnamon blood never show signs of their cinnamon parentage.

Among the old-established varieties that now are in decadence none is more striking than the lizard canary (fig. 3). Lizard canaries are known as gold or silver according as the body color is yellow or silvery gray. The wings and tail are black and the back is spangled with numerous somewhat triangular black spots. The crown in pure-bred birds is unspotted and light in color.



The crested canary is another unusual form, with a long crest extending down around the head below the level of the eyes (fig. 4). The frill or Dutch frill canary is a large bird with long curling feathers. The Lancashire is the largest of known varieties of the canary, standing head and shoulders above all others. These "giant" canaries may be crested or smooth headed. Other forms that may be mentioned are the border fancy, a small bird, and the Norwich, or Norwich plain head, from which come many of the common canaries.

It must not be supposed that the number of varieties

of canaries enumerated covers the entire field. For each of the main forms there are almost endless groups or divisions that have been developed on color peculiarities. To obtain pure-bred birds requires constant care and supervision, and with any slackness of method a

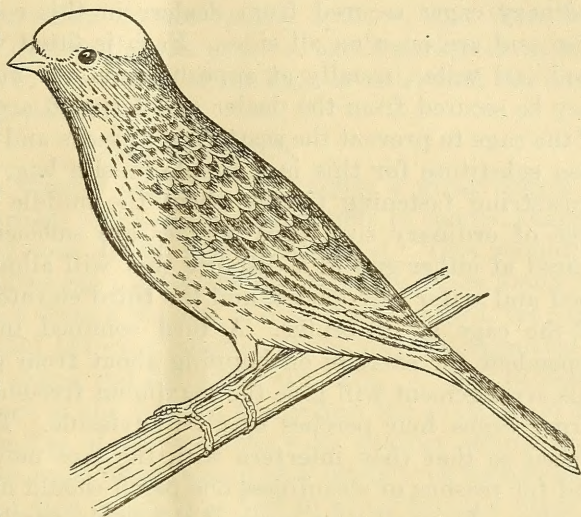


FIG. 3.—Lizard canary.

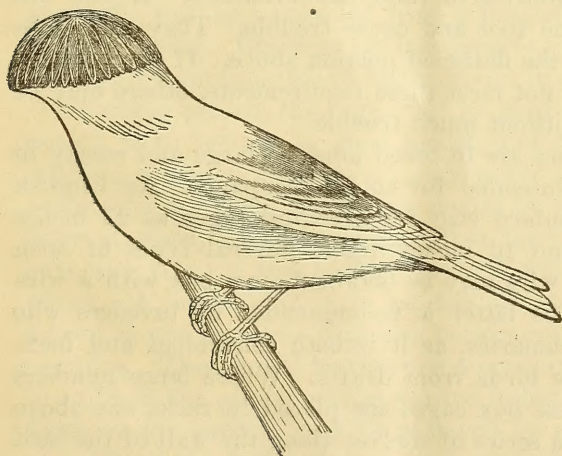


FIG. 4.—Crested canary.

host of mongrels appear. Interbreeding between the various forms, differing so widely in color, results in reversion to the original type, which was a spotted or striped greenish bird, certain proof of the common origin of all.

#### CAGES.

When choosing cages in which to keep canaries, the primary consideration should be the comfort of the birds, and this should not be sacrificed to any desire for ornate appearance. There are several types on the market, any of which may serve. So



far as shape is concerned, the square cage is best, as it affords more room for exercise than one with rounded corners.

For a single bird, the cage should be at least  $9\frac{1}{2}$  inches long,  $6\frac{1}{2}$  inches wide, and 9 inches high. A larger size is much better. The ordinary cages secured from dealers in this country are made of wire and are open on all sides. Each is fitted with receptacles for food and water, usually at opposite ends. A fine-mesh wire screen may be secured from the dealer and fastened around the lower half of the cage to prevent the scattering of seeds and seed hulls. A common substitute for this is a simple muslin bag, held in place by a drawstring fastening tightly about the middle of the cage. In a cage of ordinary size three perches are sufficient. One should be placed at either end at a distance that will allow easy access to the food and water receptacles, and the third elevated above the middle of the cage at its center. A bird confined in small quarters is dependent for exercise on hopping about from perch to perch, and this arrangement will give the maximum freedom of movement. In larger cages four perches may be advisable. These should not be placed so that they interfere with the free movement of the bird, and for reasons of cleanliness one perch should not be directly above another. In small wire cages, if the swing perch usually found suspended in the center is removed, the bird will have more room, and in hopping back and forth will not be continually striking head or wings. In larger cages this perch may remain. Perches should be large enough for the toes of the bird to grasp them readily and encircle them for three-fourths of their circumference. If they are too small they cramp the foot and cause trouble. They should be elliptical in shape, with the flattened portion above. If perches furnished with the cage do not meet these requirements, others may be made from soft wood without much trouble.

Cages in which canaries are to breed must be large and roomy in comparison with those intended for single occupants. An English authority gives the standard size for breeding cages as 22 inches long, 12 inches wide, and 16 inches high. Several types of open breeding cages made of wire may be obtained, or a box with a wire front may be made. The latter is recommended by breeders who rear large numbers of canaries, as it is both convenient and inexpensive and protects the birds from drafts. Where large numbers of canaries are kept these box cages are placed in racks one above another or arranged on a series of shelves along the wall of the bird room. They are provided with a sand tray three-fourths of an inch deep, that slides in and out from the front and facilitates cleaning. Perches may be adjusted in the following manner: One end is notched and the other has a brad driven in it filed to a sharp point. The sharpened brad is pressed against the back of the cage and a



wire on the front slipped into the notch. If made the right length the pressure of the wire will hold the perch in position.

For shipping birds the small wicker cages in which canaries come to dealers are best. These are fitted with deep, narrow-necked food and water receptacles that do not readily spill, so that there is a minimum of waste during the journey. A small packet or sack of seeds should be tied to the outside of the cage in order that the bird's supply may be replenished en route.

#### CARE OF CAGES.

Though canaries when acclimated can endure a great degree of cold without discomfort, they are very susceptible to sudden changes in temperature, and cold drafts soon prove fatal. This should be borne in mind in choosing a place for the cage. A place along the wall at some distance from a window is better for the bird, yet cages are usually suspended before windows. This may be permitted if the window is kept closed and the joints are tight. It may be necessary to line the edges of the window frame and the junction of the upper and lower halves of the window with weather stripping to prevent drafts. The room must remain at a fairly even temperature day and night. For this reason it is best to avoid keeping birds in small kitchens, as the fluctuations in heat are perhaps more marked there than in any other part of the house. Exposure to damp air is also likely to be fatal, another reason for avoiding the steam-laden air of small kitchens. Direct exposure to a strong draft of cold air must always be avoided. A cage may be placed on a small shelf along the wall or suspended from a bracket attached to the wall or window casing. Brackets are inexpensive and are convenient for use when it is impracticable to fasten hooks in the ceiling.

Wherever placed, the cage must be kept scrupulously clean if the canary is to remain in good health and free from vermin. Seed supplies must be replenished and water renewed each day. The receptacles for these necessities should be cleaned and washed carefully at short intervals. Cages that have removable bases should have the tray in the bottom covered with several thicknesses of paper. A better plan is to use the heavy coarse-grade sandpaper, known as gravel paper, that may be secured from dealers in cage-bird supplies. This should be renewed whenever the cage is cleaned, and in addition the pan should be washed in hot water from time to time. Lime on the perches may be removed by means of a scraper made of a bit of tin fastened to a wire or tacked at right angles to a stick small enough to pass easily between the wires of the cage. Cages with bottom attached should be provided with a sand tray that slides in and out through a slot in the front. This serves to catch droppings, seed hulls, and other waste, and it may be easily pulled out, cleaned, and refilled with fresh sand.



## FOOD.

The food requirements of canaries are very simple. The prime requisite is a supply of canary seed to which is added a small quantity of rape seed and a little hemp. Persons having only a few birds usually buy this seed ready mixed from dealers. The seed should be clean, well matured, and not old. If canaries do not seem to thrive it is well to examine the seed supply and crack open a few of the seeds to make certain that empty husks alone are not being fed. Too much hemp seed should be avoided, as it is very fattening.

In addition to this staple diet, lettuce, chickweed, or a bit of apple should be placed between the wires of the cage frequently. Bread that has been moistened in scalded milk, given cold, is also beneficial at times. If supplies of moist food are not kept strictly fresh and clean, bacterial diseases may result. In feeding moist foods special dishes with holders that slip in through the wires of the cage are recommended. These are sometimes known as food holders or slides. Soft foods must not be made too wet. In the case of bread, enough liquid to soften the food, but not to run or to render it a paste, is sufficient. Perhaps once a week egg food may be given. This is prepared by mincing an entire hard-boiled egg and adding to it an equal quantity of bread or unsalted cracker crumbs.

Care should be taken to use this egg food only when fresh. Cuttle bone should always be available to the canary, and at times it is well to give prepared foods that may be secured from dealers.

During the breeding season egg food must be given daily as soon as the birds are paired. It may be discontinued or given at intervals of three or four days when the female is incubating. The yolk of hard-boiled egg only may be given for the first day after the young hatch. Bread crumbs are added to this gradually, until on the third day egg food as ordinarily prepared is supplied. The usual seed supply should always be present, no matter what other food is given. Attempt should be made to regulate the supply of egg food or other soft food so that all is eaten without waste. The actual quantity will vary with individual birds. When the young are four or five days old green food may be fed, but egg food must be given until they are fully grown and able to crack canary seed for themselves. Meal worms occasionally are good for birds that are not thriving. A craving for animal food may be satisfied by bits of raw steak. It is not well to continue feeding raw meat, as it will cause a foul odor about the cage. For delicate birds, rape seed soaked in water over night and carefully drained until dry is beneficial. When the old birds are caring for well-grown young, feeding cracked hemp seed will lighten their labor. Maw seed (poppy seed) is favored by English canary fanciers as a stimulant, but its use must be guarded.



It is poisonous to most animals, including man, but seems to have no effect upon birds.

### BATHING.

Under normal conditions most birds probably bathe daily, and canaries in captivity should be allowed the same opportunity. In open wire cages in common use for singing birds the base is removed and the cage placed over a small dish containing water. In open-front cages in which the bottom is not detachable small bath cages which fasten at the open door are used. These are only a few inches wide but serve to hold a dish for water. Many birds are notional in bathing and at times ignore the offered bath. Usually the small acts of cleaning the cage and renewing the seed and water will excite in them a desire for bathing, and often when a bath is not provided the bird will do its best to perform its ablutions in the small supply of water in the drinking cup. When individual birds obstinately refuse to enter the water gentle spraying will usually induce them to bathe.

Birds brought into strange quarters usually refuse to bathe for the first few days. When water is offered they either ignore it or sitting on a perch go through the motions of bathing and drying, fluttering wings and tail with a great whirring of feathers. The bath should be offered whenever the cage is cleaned, and if left alone the birds will act normally after a few days.

Small china dishes that are not too deep make good bathing pans. When a bird becomes accustomed to one dish it will usually refuse to bathe in another of different shape or color. In winter the water should be warmed until tepid. Even in warm weather too cold water is not advisable. If the room, ordinarily warm, becomes cold temporarily, birds should not be allowed to bathe. With the plumage wet and bedraggled there is increased susceptibility to cold drafts. During molt the bath should be given not more than twice each week. If the bird is molting on color food, one bath each week is sufficient. When breeding, the female canary should not be allowed to bathe from the time the eggs hatch until the young are three or four days old.

### MOLT.

Canaries renew their covering of feathers once each year. In adults this molt occurs late in summer, and the first sign of it is the presence of a wing or tail feather on the bottom of the cage. These feathers are shed in pairs, one from either wing or from either side of the tail, dropped at approximately the same time. Never in ordinary circumstances does the canary have the wing and tail entirely devoid of large feathers. This provision is of no particular signifi-



cance in a cage bird, but enables wild birds to maintain their powers of flight. The bodily covering, too, is renewed piecemeal, so that except about the head there is normally no extensive area wholly devoid of feathers at any time. Some birds drop a few of the body feathers all through the year.

Old birds weak in physical vigor often fail to renew their entire feather covering, and ordinarily there is no remedy for it. A supply of nutritious, easily assimilated food and careful protection during the next molt may result in improvement. Usually this incomplete molt is a sign of extreme age or breakdown, and the bird does not live long.

With breeding birds the molt usually comes immediately after the breeding season. It may begin as early as the latter part of July. Normally it comes during August, and on the average should be at its height in September. Young birds molt the juvenal body plumage after leaving the nest, but retain the first growth of wing and tail feathers for a year. In healthy birds the entire molt requires about two months.

Birds usually need no special care during molt. Though they are in an abnormal bodily state at this time, healthy individuals will come through the period in good condition. Canaries are somewhat dull and stupid when molting and should be disturbed as little as possible. Bathing may be permitted once or twice each week, but if birds do not wish to bathe they should not be sprayed with water, as this may cause fainting. The molt follows its normal course best in rather damp weather. A great change in temperature or a sudden chill may check its progress and occasionally cause serious trouble. If a bird shows signs of distress, it should be placed at once in a warm, protected place. Twenty drops of brandy, five of sweet spirits of niter, and a few shreds of saffron added to the drinking water are beneficial. It is well to add egg food or moistened bread to the ordinary fare once or twice each week during molt. For ailing birds a very slight quantity of sulphur may be added to the egg food, or a weak saffron tea given instead of pure drinking water. A few linseeds in the seed supply give a gloss and sheen to the new feathers not otherwise obtainable.

### COLOR FEEDING.

That the color of canaries may be deepened or intensified by certain color foods given during the molt is well known and has attracted much interest. Turmeric, marigold flowers, saffron, cochineal, annatto, port wine, mustard seed, and other agents rich in natural color are often used for this purpose, but it is doubtful whether they exert any real influence. So far as known all success-



ful color foods have red pepper as a base. For a long time methods of preparing and feeding them were kept secret, but now they are outlined in many manuals on canary keeping.

A standard color food may be prepared as follows: To the ordinary egg food (one hard-boiled egg chopped fine with an equal bulk of bread crumbs or unsalted cracker crumbs) add a teaspoonful of ground sweet red pepper. Mix until the food shows an even reddish tint throughout. Each bird to be experimented upon should receive one small teaspoonful daily. The quantity of pepper is increased gradually, until two heaping teaspoonfuls are used. Addition of a little brown sugar and a few drops of pure olive oil is beneficial, and a small quantity of hot red pepper gives a better flavor. The food should be prepared fresh each day. In mixing, allowance must be made for variation in the size of eggs used. In color feeding some canary breeders increase the proportion of sweet red pepper until four teaspoonfuls are added to the usual quantity of egg food. Half a teaspoonful of this concentrated food is allowed each bird. This method may be used during a short, quick molt.

In selecting canaries for experiments in color feeding preference should be given to strong, vigorous, male birds. During digestion and assimilation this food puts more or less of a strain upon the system, and birds that are old or constitutionally weak may not thrive, or may even succumb under the treatment. Color food may be given young canaries at the age of 7 or 8 weeks to produce a deep color at their first molt. Birds with color that is naturally full and rich should be selected. Those having greenish markings or those descended from a male parent well marked with green are preferable. Pale birds seldom color well.

Color feeding to be successful must be started as soon as the birds are ready to molt, and feeding must be continued until no more pin feathers can be found anywhere on the body when the feathers are carefully blown aside. The usual supply of seed must be kept in the cage, for canaries can not subsist on the color food alone. Should a bird refuse the color food, the seed supply may be removed for a short time morning and evening and the color food substituted. Usually in a day or two the stimulating food will be eaten eagerly. Linseeds should be given (as during the regular molt) to impart a gloss to the new feathers. The birds chosen for color feeding should be kept in a dim light away from the windows and with the cages shaded. Open-front cages are easily provided with a screen of paper or cloth, but care must be taken to leave space for ventilation.

The color food actually supplies an enriched color element to the blood that otherwise is lacking. Until the artificial color is firmly fixed in the matured feather it fades easily when exposed to strong light. Direct sunlight must be avoided. It has been found, too,



that it is the actual red of the pepper and not the spicy element that causes the enriched color. Care should be taken to see that the supply of ground sweet pepper used is fresh and clean and that it is not artificially colored. Bathing must not be permitted more often than once a week, and the birds should be disturbed as little as possible. With proper care there will be little trouble in producing fine, healthy birds with a rich, highly colored plumage. This enhanced color lasts only during the continuance of this growth of feathers, and if color feeding is not resorted to at the next molt the canary will again be plain.

### BREEDING.

The breeding season for canaries begins properly in March. Though birds often show signs of its approach as early as January, it is better, because of the effect of changing weather conditions upon callow young, to postpone nesting activities until later, if possible. Some canary fanciers keep canaries paired throughout the year, but the more common practice is to separate the sexes except when breeding. The beginning of the mating season is marked by ringing, vigorous song among male birds, accompanied by much restless activity. Females, indifferent until now, respond with loud call notes and otherwise evince their interest. Birds may be paired without these preliminary signs, but usually this tends only to lengthen the breeding season without material benefit. The instinct to breed may be stimulated when necessary by the addition of egg food and green stuff to the diet.

Canaries in captivity are polygamous when opportunity offers, and many breeders place two or even three females with each male. It is usually considered better, however, to keep them in pairs, as they are more readily handled, and when the young are hatched the male is able to assist in caring for them. Where two females are kept with one male the birds should be placed in a cage divided by slides into three compartments. The male is placed in the middle, and a female on either side. During half the day the male is thrown with one female, and during the remainder with the other. This arrangement necessitates the use of three sets of seed and water cups in each cage. When the females begin to incubate the male is removed or excluded from both.

A cage suitable for one pair of canaries should be equipped with a sliding wire partition. The male and the female are placed one in either compartment and the two left to make acquaintance. The male will begin to feed the female through the wires in a day or two, or perhaps at once, and when this is observed the slide may be withdrawn and the birds kept together. If a cage is used that has no slide there is usually some bickering between the birds at first, but



birds are rarely found that do not in the end agree. A cage thus used without a slide should be new to both birds, in order that neither may resent the presence of an intruder in a cage which it has been accustomed to consider its own.

Canaries will build in anything that offers support. A nest box of wood, or, better, an earthenware nest pan, may be fastened to the side or back of the cage midway between the two perches. The rush or willow nests sold by many dealers, while serviceable, may harbor vermin. The earthenware nest pan is best, as when the breeding season is over it is readily cleaned and put away for another year. Failing this, a box one inch and a quarter or more deep made of thin wood may be used. The nest box or pan should have a lining or bottom covering of felt. This may be pasted in the earthenware pan, and when it is desired to renew it the covering may be soaked loose without trouble. The nest receptacle, of whatever description, should be suspended an inch above the level of the perches. This prevents the young from leaving the nest too soon. If the nest is not too near the perches the male is not so likely to be obtrusive during incubation.

Soon after pairing the female will be seen carrying feathers in her bill or searching about the bottom of the cage. If a little nesting material is given her she will be content to arrange and rearrange it for a few days. As soon as she shows serious intention of building, enough material for actual nest construction may be supplied. If a considerable quantity is furnished at first it is merely wasted. The material may be held in a small wire rack suspended on the outside of the cage or placed inside. Bits of string, cotton, slender blades of dried grass, dried moss, cow's hair, or other soft material will serve well. No long strings nor long hairs should be given, as these may cause trouble later by entangling the feet and legs of mother and young. Everything furnished should be clean and free from dust. Some canaries are expert nest builders, while others construct a slovenly structure that barely serves to contain the eggs. In some cases they even refuse to build, and it is necessary to construct a nest for them.

The first egg will be deposited from a week to a month after the birds are paired. Normally it is laid in about two weeks. Four or five eggs are the usual number in a setting, but this may vary from three to six. The eggs should be removed as soon as laid. This may be done readily with a teaspoon, with care not to injure the delicate shells. The eggs should be kept in a cool place, slightly embedded in fine corn meal or cared for in some other manner that does not allow them to roll about or touch each other. When it is thought that no more eggs are coming all are replaced in the nest with the last one laid. Removing the eggs and then replacing them

postpones incubation and development in those first laid and makes the time of hatching more even. The normal period of incubation is 14 days.

Egg binding sometimes causes trouble and may be dealt with by holding the female with the vent over the steam of hot water. A good method is to fill a narrow-necked jar or bottle with hot water and cover the mouth of the receptacle with cheese cloth; the female is then held carefully for a minute or two in the rising steam. Often the egg will drop at once and be caught in the cheese cloth, or it may be deposited in the normal manner after the bird is returned to the cage.

The male canary is ordinarily a model husband and parent, giving no trouble, but if he should annoy the female during incubation or attempt to injure the young he should be removed at once. It is the natural instinct of an incubating bird to conceal itself as much as possible, and though canaries are tame, this tendency should be recognized and respected. This does not mean that they are to be neglected. Each breeding cage should be equipped with a sand tray which should be cleaned at least every other day. In no other way can it be hoped to rear numbers of birds successfully. Except for this necessary care and the giving of food, water, and bathing facilities, the birds should be bothered as little as possible.

The young birds leave the nest when 20 to 30 days old. They may be left with the parents as long as they are fed and should never be removed entirely until it is found that they are able to crack the seeds upon which they must feed. Sometimes a female preparing a nest for a second brood will pluck the feathers from the young. In such case the young should be placed in a small nursery cage suspended from the side of the breeding cage in a manner that will allow feeding between the wires. When the young are finally removed they must not be placed with birds older and stronger for a time. They should be watched carefully the first day, and if any one does not feed it must be returned to the parents at once. Though most of the losses among canaries come at this time, with care in food and cleanliness there should be little trouble.

#### SEX AND AGE.

To determine the sex and age in living canaries is difficult and is to be attempted only by one who has had long experience as a canary fancier. The external characters denoting sex are not easily described. In nearly all cases a male may be recognized by his proficiency as a songster, but occasionally female birds also possess a clear, full song. When in breeding condition the sex may be determined readily by examining the vent. In males it is protuberant,



while in females it does not project below the level of the abdomen. By daily observation the canary breeder is generally able to distinguish the sexes through slight differences in carriage and mannerisms not apparent to one not familiar with them.

In judging age the feet offer the only characters easily seen, but even these can not always be relied upon. Birds a year old or less usually have the skin and scales covering the feet and tarsi smooth and of fine texture. In older birds they appear coarser and roughened. Very old birds usually have had the claws trimmed until they appear blunt or rounded rather than sharp and pointed (see p. 18).

Canaries have lived many years when cared for regularly and when kept protected from sudden changes of weather and temperature. Dr. C. W. Richmond, Acting Curator of Birds in the United States National Museum, relates that two birds, hatched in the same brood and kept entirely separated after they left the nest, lived 18 years, dying within a few weeks of each other. Another case is on record in which a canary was known to be at least 34 years old when it died, and even this advanced age may have been exceeded. Usually with advancing years birds molt irregularly or lose part of the feathers entirely. Often their eyesight is impaired. It is said that canaries that have not been paired live much longer than those allowed to breed.

#### VERMIN.

Canaries serve as hosts for two forms of external parasites. The larger of these, a bird louse known usually as the gray louse, is an insect<sup>1</sup> with a slender, elongate body and a large head armed with strong jaws. This pest feeds upon the feather structure of the bird's outer covering and though it does not suck the blood of its host, its sharp claws irritate the skin and cause discomfort to the bird. The eggs of the gray louse are attached to the feathers by a gum and are not easily removed. The young insects resemble the adults and in a few weeks after hatching are fully grown. They are best combated by blowing insect powder (pyrethrum) into the plumage of the affected bird with a small bellows or blower. This treatment should be repeated two or three times at intervals of a week to insure that any young bird lice hatching in the meantime will be killed.

The other parasite of canaries is a small mite, a minute spiderlike creature that when fully grown is barely visible to the unaided eye. Its natural color is whitish, but nearly always it is filled with blood sucked from the body of the unfortunate bird harboring it, so that it appears bright red. These mites are nocturnal and except in cases of severe infestation are seldom found upon the body of their host

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<sup>1</sup> Order Mallophaga.

during the day. They are often found in the slits at the ends of the perches or in the round piece of metal forming the support at the top of the ordinary wire cage. In wooden cages they hide in cracks, nail holes, or crevices, and their presence is betrayed upon close examination by minute white spottings. If unnoticed, they multiply rapidly and sap the strength of the bird by sucking its blood. When their presence is suspected, remove the bird temporarily and either clean the cage thoroughly with a solution of one ounce of commercial carbolic acid in a gallon of water, applied with a small brush, taking care to reach all crevices; or immerse the cage in boiling water, keeping it covered for several minutes. In addition, insect powder may be used as for the gray louse.

Where facilities for frequent bathing are offered and the cage is kept clean, there is usually little trouble with either mites or bird lice. When a bird is sick and neglects its customary bathing, cleaning, and preening, it is surprising to see how rapidly these pests multiply. With care, however, they may be completely eradicated, though fresh outbreaks are liable to occur when new birds are brought in.

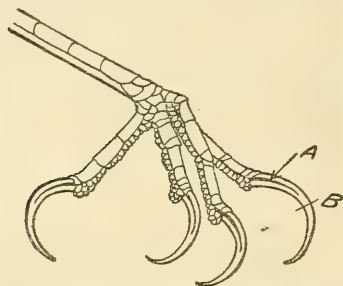


FIG. 5.—Diagram of foot of canary with overgrown claws. A, Terminal blood vessel; B, point at which claw may be trimmed without injury.

of the bird as it moves about on the ground or among twigs and limbs keep the claws properly worn down. Confined in a cage, the canary is less active, and while the rate of growth of the claws remains the same they are subject to much less abrasion. It is necessary, therefore, to trim them with a pair of sharp scissors every few months. It is important to watch the condition of the claws carefully, as by catching they may cause a broken leg. In each claw a slender blood vessel extends well down toward the tip (fig. 5). This may be seen on close examination through the transparent sheath of the claw. In trimming cut well beyond this canal and take special care not to break the leg while handling the bird.

In cage birds the horny covering of the bill, as well as the claws, sometimes becomes distorted through growth without sufficient wear. The tips of the mandibles may be pared down with a sharp knife, but care must be taken not to cut deep enough to reach the quick.

#### CARE OF FEET AND BILL.

As a canary grows old it will be noticed that its claws get long and catch on the perches and wires as it hops about the cage. In a state of nature the activities



### BROKEN LIMBS.

In case of bad fractures or injuries it is perhaps best for all concerned to end the troubles by killing the bird. If a valuable bird breaks a leg, a slender splint of wood held by a bandage may be applied with care. This support must not be touched for two or three weeks, but then it may be removed entirely. When the break occurs in the lower leg (tarsus) a small quill makes a simple support. The quill is split and cut down until it fits snugly around the part affected. It is then padded inside with a few shreds of cotton and tied carefully in place with silk thread.

Broken wings should be allowed to heal without outside interference. All high perches should be removed from the cage, and food and water made easily accessible. A bird with a broken wing must be kept as quiet as possible in order that the fracture may heal.

### LOSS OF FEATHERS ABOUT HEAD.

Baldness is sometimes occasioned by mites or bird lice and may be treated best by removing the cause. Loss of feathers about the head, however, may indicate old age or general debility. At the natural time of molt the growth of feathers on the bare spots may be aided by warmth and a well-regulated diet. In addition to the usual food, twice a week give a little bread moistened with milk which has been dusted with a mixture of two parts of sulphur to one of potassium chlorate. At the same intervals rub a little carbolized petrolatum on the bare places.

### DISEASES.

With ordinary care in cleanliness, freedom from drafts, and a well-regulated food supply, canaries are subject to few ills. In fact, most troubles may be traced to some untoward circumstance in handling them. Their diseases are very little understood, and correct diagnosis is difficult. When birds become sick, care should first be taken in regulating the diet and general sanitary conditions. A sick bird must be removed at once to a separate cage, since its companions will continually peck and worry it. When numbers of canaries are kept it is best to remove ailing birds from the bird room. This precaution may prevent the spread of some contagious or infectious disease. It is always well to move a sick bird to a warm place. Heat and protection from drafts work wonders with ailing canaries and often are sufficient alone to restore them to health.

When medicine is necessary it is best to administer it in the drinking water. If this can not be done it may be given directly in the bill by means of a quill or a medicine dropper. In administering medicines it must be remembered that a canary is small and that a single drop in most cases is a large dose. Indiscriminate dosing of birds with various remedies is to be avoided.

The few instructions that follow are not to be regarded as infallible, but they may be of assistance in simple ailments. When a bird is seriously ill there is usually little chance of its recovery.

### RESPIRATORY TROUBLES.

The fact that canaries are susceptible to cold drafts can not be too strongly emphasized, and it may be said that a large proportion



of their common ailments come from such exposure. In ordinary colds there is difficulty in breathing and some liquid discharge from the nose. Frequently this is accompanied by coughing. A bird thus affected should be kept in a warm room free from all drafts and protected from irritating dust, vapor, or tobacco smoke. The symptoms are increased as the cold progresses and becomes acute, and the bird sits with feathers puffed out, seeming really ill. Breathing is difficult and rapid. If there is enough catarrhal secretion partly to block the respiratory passages a slight bluish tint is noticed beneath the transparent sheath of the bill. As a remedy, place in the drinking cup 1 ounce of water to which has been added 20 drops of syrup of tolu, 10 of sweet spirits of niter, and 10 of glycerine. As a stimulant in severe cases, from 5 to 10 drops of whisky or brandy may be added to this.

Pneumonia in cage birds often follows exposure and is nearly always fatal. The symptoms, rapid and difficult breathing with little catarrhal discharge, appear suddenly. The bird becomes very weak at once and usually dies in from two to seven days. Little can be done beyond providing an easily assimilated food, as egg food and bread moistened in milk. A few drops of whisky may be added to the drinking water as a stimulant.

Asthma is a chronic affection, in which there is difficulty in expiration of air in breathing. In severe cases a contraction of the abdominal muscles is evident in forcing the air from the lungs. Asthma is more in evidence at night, and often birds apparently free from it during the day will wheeze when at rest. There is practically nothing that can be done for it. Sometimes a semblance of asthma is caused by indigestion from overeating. Fanciers consider asthma hereditary and do not recommend birds so affected for breeding purposes.

#### INTESTINAL COMPLAINTS.

Intestinal troubles arise in nearly all cases from errors in food or water supply and are avoided by care in feeding. In case of diarrhea, remove all green and soft foods from the cage for a time and give only the normal seed supply. It is well to add a small quantity of epsom salts to the drinking water for a day. If there is no improvement, feed the bird a bit of moist bread, with the surface covered lightly with bismuth (subnitrate), or place an ounce of water in the drinking cup, adding a solution of 3 or 4 drops of tincture of opium and 15 drops of whisky. For constipation the addition of lettuce, apple, chickweed, or other green food to the regular menu is usually sufficient; if not, a pinch of epsom salts may be added to the drinking water. The quantity of the purgative should be enough to impart a faintly saline taste to the solution. Castor oil is not a good corrective remedy for small birds.

When worms are present, as sometimes happens, small fragments of these internal parasites may be seen in the droppings when the cage is cleaned. As a remedy, place in the drinking cup 8 or 10 drops of tincture of gentian in an ounce of water. This may be given for two days, and in addition 2 drops of olive oil may be administered in the bill by means of a medicine dropper.



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